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ABSTRACT

Two theories, the closed loop model (divides self-regulation into self-monitoring, self-evaluation, and self-reinforcement) and the non-mediational model (defines self-regulation as behavior that is controlled by its long-term and observable consequences), have been proposed to explain why behavior changes when self-monitoring occurs. Both theories present empirical predictions which can be subjected to investigation. Based on a matching of their scores on Rosenberg's Self Esteem Scale, undergraduates (N=148) were assigned to either a self-monitor success, self-monitor failure, or a no self-monitoring control group. Subjects completed the Semantic Differential Measure of Emotional States before and after solving sets of five anagrams. Between sets of anagrams, control subjects rested, success-monitoring subjects listed correct solutions, and failure-monitoring subjects listed incorrect solution attempts. Persistence and performance were also measured. Results showed that performance differences among the conditions were nonexistent. Data provided support for the closed loop model of self-monitoring: subjects monitoring failures reported greater decreases in pleasure and less willingness to return for a similar experience than other subjects. These effects were consistent with greater negative self-reinforcement. An unexpected finding was that a substantial number of subjects spontaneously self-monitored their successes. The results provide evidence for the existence of effects that are most consistent with a mediational model of self-regulation. (NRB)

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Self-monitoring success and failure:

Evidence for a mediating mechanism

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Self-monitoring is the systematic observation of one's own behavior. Recent interest in self-monitoring has developed from the observation that reactive effects are obtained when people monitor their own behavior. The reactivity of self-monitoring has been found only inconsistently. Some investigators have found that self-monitoring is reactive (e.g. Rutner and Bugle, 1969) while others have found no differences between those who self monitor and those who do not (e.g. McNamara, 1972).

The effects of self-monitoring have been most closely studied in relation to smoking and eating behavior. Studies of subjects trying to lose weight by monitoring their eating behavior have found that while daily recording of weights have no noticeable effect (Romanczyk, Tracey, Wilson, and Thorpe, 1973), self-monitoring of calories or eating habits is reactive (Romanczyk et al., 1973; Romanczyk, 1974; Mahoney, 1974; and Green, 1978). Investigations of self-monitoring and smoking behavior indicate that motivation of the

subject is an important factor in predicting whether monitoring will be reactive (e.g. Lipinski, Black, Nelson, and Ciminero, 1975).

The valence of a target behavior has been shown to be one of the key parameters of reactions to self-monitoring. Kazdin (1974) and Seick and McFall (1976) independently developed laboratory tasks in which the valence of the behavior to be monitored was systematically varied. Results of the two studies were consistent in demonstrating the importance of the valence parameter.

A wide variety of other parameters have been studied in terms of their effects on the reactivity of self-monitoring. Results from these studies are summarized in Table 1. A complete discussion of these results can be found elsewhere (Susser, 1981).

Two different theoretical models have attempted to explain the reactive effects of self-monitoring. The closed loop -- mediational model (Kanfer, 1970) divides the self regulation process into three stages: (1) self monitoring, (2) self evaluation, and (3) self reinforcement. Self evaluation and self reinforcement may be triggered by self-monitoring, and the entire self regulatory process might take place covertly. The non-mediational model (Rachlin, 1974)

Table 1.

Self-monitoring reactivity:
Emperical findings and theoretical predictions

Parameter	Findings	Predictions vs. Evidence	
		Closed loop model	Non-mediational model
method of recording	obtrusive is more reactive	consistent	consistent
schedule of recording	more frequent is more reactive	consistent	consistent
number of target behaviors	more behaviors is less reactive	consistent	consistent
accuracy of self-monitoring	no relationship in most studies	inconsistent	inconsistent
other active variables	reinforcement, goal setting, and expectancy each add to effects	no prediction	no prediction
target behavior	not enough evidence	no prediction	no prediction
motivation	positively related to reactivity	consistent	consistent
valence	related to reactivity	consistent	consistent
aspect of target behavior monitored	important in many cases	consistent	consistent
self-monitoring success vs. failure	(1) success generally better	consistent	consistent
	(2) influences other variables	consistent	inconsistent

denies the need for covert mechanisms such as self evaluation and self reinforcement to explain the effects of self-monitoring. Instead it proposes that behavior is controlled by its long term and observable consequences. Self-monitoring merely makes these consequences more salient. Implications of these theories for the various parameters that have been studied in relation to self-monitoring reactivity are summarized in Table 1 and fully discussed elsewhere (Susser, 1981).

The non-mediational model seems to rely on the argument that it is impossible to operationalize a measure of mediating mechanisms such as self reinforcement, therefore it is nonsensical to talk about self reinforcement or self evaluation as if they exist. In order to demonstrate the existence of the mediating mechanisms in such a way that the conditions of this argument are satisfied, it is necessary to demonstrate observable behavior other than just behavior that could also be explained by increased salience of the eventual consequences.

Kirschenbaum and Karoly (1977) and Litrownik and Freitas (1980) each had subjects perform a task and self-monitor either their successes or failures. Subjects in both studies performed better under the success monitoring condition. Success monitoring subjects in the former study also scored

generally more positively on measures that would be expected to correspond to positive self reinforcement. These results are supportive of the closed loop model. However, a more convincing demonstration of the existence of a mediating mechanism would be to demonstrate behavior that corresponds to self reinforcement without concomitant changes in performance. Otherwise, differences in these measures might be explained as being caused by performance differences.

The present study sought to do just that. Specifically it was hypothesized that, with performance held constant, subjects self-monitoring their successes would be more likely to positively evaluate and positively self reinforce themselves, than subjects monitoring their failures, who would be more likely to negatively reinforce themselves. These differences would be reflected by higher ratings of pleasure, greater willingness to repeat the experience, and more persistence at the task for success monitoring subjects compared to those monitoring failures.

Additionally it was hypothesized that since people with low self esteem react more negatively to failure (e.g. Solly and Sorman, 1956), the differences between self-monitoring success and self-monitoring failure would be greater for subjects with low self esteem.

Methods

The experimental design was a 3 x 2 design. Subjects were assigned to one of three groups, a self-monitor success, a self-monitor failure, and a no self-monitoring control group. Assignment to the conditions was based on a matching of pretest scores on Rosenberg's Self Esteem Scale (Rosenberg, 1965). Experimentally blind research assistants explained and administered the task to each of the 148 subjects individually. Subjects had been recruited from undergraduate introductory psychology classes.

Thirteen subjects assigned to the self-monitor failure group were replaced by other subjects. These subjects had circled, underlined, checked or listed the anagrams that they had solved correctly. These subjects had unwittingly duplicated the conditions that they were supposed to be contrasted with. It was therefore considered inappropriate to analyze the data from these subjects as if they had only self-monitored their failures. Data from these subjects was considered in a separate analysis, and these subjects were immediately replaced by new subjects.

Subjects were first asked to complete Mehrabian and Russell's (1974) Semantic Differential Measure of Emotional States (SDMES), and then solve as many sets of five anagrams as they wished to. Each set was presented for three minutes with 30 seconds between presentations during which subjects

either rested (control group), listed correct anagram solutions (success monitoring group), or made a list of the last attempted incorrect solution for those anagrams not solved (failure monitoring group). The SDMES was readministered after the anagram task and the subject's willingness to return for an equivalent experience was assessed. Additional measures were of persistence (number of anagram sets attempted) and performance (percentage of correctly solved anagrams). Performance differences were minimized by using a combination of easy, moderate, and impossible anagrams.

Results

Performance differences among the conditions were nonexistent (no F was greater than 1, all probability levels were between .4 and .6). Multivariate analysis of covariance indicated significant differences among the treatment groups ($F(6,254)=2.50$, $p < .025$) but no differences due to self esteem or to an interaction effect. Individual analyses of variance indicated differences on the measure of willingness to return ($F(2,129)=3.65$, $p < .025$), but no significant differences on the persistence measure. An analysis of covariance for pleasure revealed significant difference among the treatment conditions ($F(2,128)=4.09$, $p < .025$).

The Neuman-Keuls post hoc test on the pleasure variable indicated that only the differences between the failure mon-

itoring group and each of the other two groups was significant ($p < .05$). The Neuman-Keuls post hoc test of differences among groups on willingness to return indicated that only the difference between the failure group and the control group was significant ($p < .05$). Table 2 presents the means and standard deviations obtained on the pleasure, willingness to return, and persistence measures.

In addition to the predicted results it was noted that several subjects spontaneously self-monitored their successful anagram solving. Scores obtained by these subjects on the measures expected to correspond with positive self reinforcement were higher than scores obtained by any of the groups that did not monitor spontaneously. A multivariate analysis of variance indicated that these differences were only marginally significant ($.05 < p < .10$). Exploratory correlations were obtained between the tendency for a subject to self-monitor spontaneously and ^{each of} / several variables, for all subjects in the self-monitor negative and control groups. Correlations with a probability level below .05 were obtained with persistence ($r=.17$), willingness to return ($r=.20$), pleasure ($r=.18$), and self esteem ($r=.17$). However, because these are the results of multiple statistical tests, they should not be considered truly statistically significant.

Table 2.

Means and Standard Deviations for Pleasure, Willingness to
Return and Persistence

		Measure					
		Pleasure					
Group	n		Pre	Post	Adjusted	Return	Persistence
Positive Self-monitoring							
High SE	22	M	7.82	0.55	0.34	5.26	13.36
		SD	8.03	10.58		3.28	4.00
Low SE	26	M	5.39	-2.65	-2.06	5.80	13.42
		SD	7.28	8.14		2.10	4.41
Total	48	M	6.50	-1.19	-0.96	5.55	13.40
		SD	7.65	9.37		2.66	4.19
Negative Self-monitoring							
High SE	21	M	8.52	-4.71	-5.16	5.13	11.10
		SD	7.03	8.01		3.10	4.57
Low SE	22	M	6.68	-5.45	-5.29	4.96	12.68
		SD	7.49	6.06		3.00	5.22
Total	43	M	7.58	-5.09	-5.22	5.04	11.91
		SD	7.25	7.01		3.01	4.92
No Self-monitoring							
High SE	25	M	8.28	-2.16	-2.52	6.68	15.20
		SD	7.39	7.25		2.17	4.90
Low SE	19	M	6.58	-0.42	-0.22	6.37	11.26
		SD	9.41	7.23		2.11	4.83
Total	44	M	7.55	-1.41	-1.53	6.55	13.50
		SD	8.26	7.21		2.12	5.21

Discussion

The data obtained provides support for Kanfer's closed loop--mediational model of self-monitoring. Unlike the similar studies done by Kirschenbaum and Karoly (1977) and Litrownik and Freitas (1980) there were no performance differences obtained between the success monitoring and failure monitoring groups. Performance differences might be used to explain the differences in other variables obtained in those studies. However, in the present study, even without performance differences, those subjects monitoring their failures reported greater decreases in pleasure and less willingness to return for a similar experience than other subjects. These effects are consistent with greater negative self reinforcements and would be hard to explain without positing some internal event taking place as a result of self-monitoring.

The lack of differences between the self-monitoring success and the control group might be attributed to the likelihood that subjects in the control group may have been spontaneously self-monitoring their successes. In fact, 16 of the 44 control subjects provided written evidence in the form of circled, underlined, checked, or listed anagram solutions that they had done exactly that. It is not unlikely that other subjects who did not leave the same written records, covertly self-monitored their successful

anagram solutions. By this reasoning the conceptual differences between the control group employed in this study and the success monitoring group are small, especially when either group is compared to the failure monitoring group.

Spontaneous Self-monitoring

It had not been anticipated before this experiment began that some subjects in the negative self-monitoring condition and the control group would spontaneously keep track of the anagrams that they had solved, and thus at least partially replicate the experimental condition that they were to be contrasted with. The occurrence of spontaneous self-monitoring in the experiment raises two issues:

(1) Because the subjects who spontaneously self-monitored were excluded from the negative self-monitoring condition, the internal validity of the study is threatened by the differential mortality rates of the experimental conditions (Campbell and Stanley, 1963).

(2) The second issue is the question of whether subjects who spontaneously self-monitored their behavior can be distinguished from others, and whether they behave differently from other subjects.

Experimental Mortality. The question as to whether subjects assigned to the negative self-monitoring condition but who spontaneously self-monitor positive outcomes would behave like the other subjects who successfully completed that condition had they not spontaneously self-monitored, cannot be answered from the present data. It seems inappropriate to consider the 13 spontaneous self-monitoring subjects assigned to the negative self-monitoring group as having successfully undergone that experimental manipulation. Even so, if the scores those subjects obtained were to be added to the scores of subjects who did complete the condition, the mean scores of all subjects initially assigned to the condition remains lower for all three major dependent variables. However, the differences among the groups would no longer be statistically significant at the $p < .05$ level.

The difficulty that these subjects create for a definitive interpretation of the statistical results, is that it is not clear whether the scores that these subjects obtained is due to having spontaneously self-monitored or whether it is due to some personality variable that coincides with the tendency to spontaneously self-monitor. If the latter is the case than it would be possible that this personality variable also correlates with scores on the dependent measures. If this were so, then excluding these subjects would bias the outcome of the experiment. In any replication of

this study care should be taken to chose a task in which spontaneous self-monitoring is not likely, or as a second alternative, subjects who have a tendency to spontaneously self-monitor should be excluded from all the experimental conditions or prescreened and considered as a seperate factor that crosses the other conditions.

The Tendency to Self-monitor Spontaneously. Subjects who spontaneously self monitored behaved very much like the predictions made for the subjects who were assigned to self-monitor positively. Specifically, those subjects persisted longer, reported more pleasure, and were more willing to return than subjects that did not monitor spontaneously. While one may speculate that the similar scores on dependent variables were obtained because both groups of subjects went through the same process, the experiment offers no proof of this. Though not conclusive, these results are consistent with the closed-loop model.

Correlations obtained in this experiment between the tendency to spontaneously self-monitor and other variables might suggest some insights into the process of spontaneous self-monitoring. A significant correlation was obtained between the tendency to self-monitor spontaneously and self esteem. Subjects higher in self esteem were slightly more likely to spontaneously self-monitor.

This correlation is suggestive of the mechanism by which those people with higher self esteem may be able to persist more and succeed better in adverse situations than those people who tend to score lower on self esteem scales. It may be that while people who score low on self esteem scales tend to passively accept a failure situation, those people who score high on self esteem scales are more likely to actively look for the ways that they are succeeding (i.e. self-monitor their successes) and help themselves to maintain their motivation to achieve at a task. The data are also consistent with the tendency of high self esteem subjects to report relatively fewer negative self evaluations than do subjects who score low in self esteem. Spontaneous self-monitoring appears to be a mechanism that would allow for a reinterpretation of events such that more emphasis is placed on the positive aspects of the person's experience.

It would be interesting to study the subjects who spontaneously self-monitored beyond just the results suggested by this study. First, it would be important to know whether this self-monitoring is a stable personality characteristic. After that is established, one might be able to learn something about the naturally occurring self regulatory process. For example, it might be true that spontaneous self-monitoring is part of the process of delaying gratification, or it may be related to other personality variables associated with some form of self control.

Summary

The purpose of the present study was to devise a test to help evaluate the relative merits of the mediational vs. the nonmediational models of the self regulatory process. Specifically it was hypothesized that in order to distinguish between Kanfer's (1970) mediational model of self regulation and the nonmediational model proposed by Rachlin (1974), it would be necessary to find evidence for the existence of the mediational mechanism. This evidence would make the distinction most clearly if it were something other than the behavior change that both models posit as direct results of self-monitoring. The first hypothesis that was tested was that if the behavior that was being monitored was prevented from changing, and if that behavior change would have been mediated by self evaluation and self reinforcement, then this self reinforcement could be detected by looking for evidence that the self evaluation and self reinforcement occurred even without change in performance. Change in level of pleasure reported, willingness of subjects to return for a similar experience, and persistence were suggested as measures that would detect the hypothesized self reinforcement. Differences between groups on the mood (pleasure), and willingness to return measures were detected, but none on the persistence variable. These differences provide evidence for the existence of effects that are most consistent with a mediational model of self regulation.

The second hypothesis was that subjects scoring low on a self esteem measure would produce greater differences between the positive and negative self-monitoring groups than subjects scoring high on self esteem. This was suggested by research demonstrating differential reactions of high and low self esteem subjects to the experience of failure. This hypothesis was not supported by the data.

In addition to the hypotheses that were tested it was noted that some subjects spontaneously self-monitored their behavior. It is difficult to make definitive statements about these subjects based on the data collected in this study. Research regarding those who spontaneously self-monitor may prove fruitful in the future.

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